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Mental Disorders and Quality of Care among Postacute Myocardial Infarction Outpatients

Heart disease is the leading cause of death in the United States (Centers for Disease Control and Prevention, 2001). Numerous studies have shown that cardiovascular mortality rates are higher in persons with mental disorders compared with the general population (Barefoot and Schroll, 1996; Dalack and Roose, 1990; Felker et al., 1996; Ösby et al., 2000; Wulsin et al., 1999). A recent study (Druss et al., 2001) of Medicare beneficiaries aged ≥65 years indicates that a substantial portion of the excess mortality after acute myocardial infarction (AMI) may be explained by differences in quality of care between patients with and without mental disorders.

The present study examines the association between mental disorders and quality of post-AMI care in a national sample of veterans, including patients under age 65 years, who were receiving care at Department of Veterans Affairs (VA) medical centers. The VA is the largest public-sector health care system in the United States and treats approximately 10,000 patients with AMI annually (Department of Veterans Affairs, 1998). We test the hypothesis that, compared with persons with no mental illness, patients with substance use and psychiatric disorders are more likely to receive poorer quality of care after AMI, controlling for demographic characteristics, chronic medical conditions, use of medical services, and hospital-level characteristics.

Methods

Study Sample. Subjects included a national sample of 5886 veterans discharged from VA hospitals with a principal diagnosis of AMI (ICD-9-CM code 410) within 6 months before the index study date.

Data Sources. We used 1998–1999 chart-review data from the VA's quality improvement External Peer Review Program (EPRP; Halpern, 1996) merged with inpatient and outpatient administrative databases.

Measures. The outcome of interest was quality of care after AMI. Consistent with national clinical guidelines (Ryan et al., 1999), we examined the following three EPRP chart-based indicators of quality: use of aspirin and of beta-blockers as of the most recent outpatient visit and development of a cholesterol/cardiac risk factor management plan.

We used VA inpatient and outpatient administrative records for the year prior to the index date to identify persons with a diagnosed mental disorder: a) substance use disorder (ICD-9-CM codes 303 to 305); b) schizophrenia or other psychotic disorder (ICD-9-CM codes 295, 297, 298); c) post-traumatic stress disorder (PTSD; ICD-9-CM code 308); d) major affective disorder (ICD-9-CM code 296); and e) other mental disorder (ICD-9-CM codes 290 to 319, excluding those listed above).

In multivariable analyses, we adjusted for a variety of potential confounders, including demographic characteristics (age, sex, race, level of VA service connectedness [Hoff and Rosenheck, 2000], and distance from veteran's home to nearest VA medical facility [Rosenheck and Stolar, 1998]); chronic medical conditions (hypertension, obesity, chronic obstructive pulmonary disease, and diabetes mellitus); and use of medical services in the past year (number of primary care visits, number of specialty medical visits, and number of medical inpatient days). In addition, hospital characteristics have been associated with variation in care after AMI (Allison et al., 2000; Willison et al., 2000); thus, we controlled for the following facility-level variables: hospital size (defined as the total number of patients treated annually), academic emphasis (defined as the proportion of funds spent on teaching and research), and mental health emphasis (defined as the proportion of funds spent on mental health versus general health care) (Leslie and Rosenheck, 2001; Rosenheck and DiLella, 2000).

Statistical Analysis. We used χ^2 and logistic regression analyses to assess the association between mental disorders and each of the three quality indicators. Logistic regression modeling was performed using generalized estimating equation (GEE) techniques to account for the clustering of patients within facilities and to incorporate both individual-level and facility-level covariates (Liang and Zeger, 1993). Because odds ratios may not provide accurate estimates of risk when the outcome of interest is relatively common, we calculated cross-sectional prevalence ratios (PRs) and 95% confidence intervals (CIs) from odds ratios by using the method described by Zhang and Yu (1998). All analyses were performed using SAS version 6.12 (SAS Institute, 1996).

Results

The sample had a mean age of 65.2 years (SD = 11.1) and was 98.6% male and 82.0% white. Overall, 27.4% of the sample (N = 1613) had a diagnosed mental disorder. Patients with and without mental disorders did not significantly differ with respect to sex, race, and prevalence of chronic medical conditions. However, compared with those with no mental disorder, mentally ill patients were more likely to be younger, to receive VA compensation for a service-connected disability, to live closer to a VA medical facility, and to have used increased inpatient and outpatient medical services in the previous year. In addition, they tended to be treated at facil-

TABLE 1

Proportion of Eligible Postacute Myocardial Infarction Outpatients with Chart Documentation of Three Quality Indicators, by Mental Disorder

Mental Disorder	N[a]	% Aspirin Use	N[a]	% Beta-Blocker Use	N	% Cholesterol Management[b]
Overall	5611	96.5	5406	93.0	5869	97.9
Substance use disorder						
Yes	308	95.1	289	88.6*	316	98.1
No	5303	96.5	5117	93.2	5553	97.9
Psychotic disorder						
Yes	188	96.3	179	90.5	195	97.9
No	5423	96.5	5227	93.1	5674	97.9
Posttraumatic stress disorder						
Yes	252	96.8	247	91.9	261	98.1
No	5359	96.5	5159	93.0	5608	97.9
Major affective disorder						
Yes	366	97.3	347	90.5	375	98.4
No	5245	96.4	5059	93.1	5494	97.9
Other mental disorder						
Yes	1224	96.2	1171	92.3	1275	97.9
No	4387	96.6	4235	93.2	4594	98.0

[a] Excludes patients for whom the therapy was medically contraindicated or medically discontinued.

[b] Presence of a cholesterol/cardiac risk factor management plan was defined as inpatient or outpatient documentation of one or more of the following: patient taking cholesterol-lowering drug, dietary/nutritional management of fat and/or cholesterol management, patient advised to increase physical activity, and referral to a cardiac rehabilitation program.

*p = .003 for chi-squared test.

ities that spend a greater proportion of funds on mental health versus general health care.

As shown in Table 1, nearly all eligible patients had chart-documented use of aspirin (96.5%) and of beta-blockers (93.0%) at the most recent outpatient visit. Similarly, a cholesterol/cardiac risk factor management plan was documented for 97.9% of patients. With respect to these indicators, quality of care was similar for patients with and without various serious mental illnesses, with the following exception: patients with a substance use disorder were significantly less likely to be taking beta-blockers than those without such a disorder (88.6% *vs.* 93.2%, $p = .003$).

The bivariate associations presented in Table 1 were unchanged after controlling for comorbid mental disorders and other potential confounders. In fully adjusted analyses, use of beta-blockers was 5% less likely among patients with a substance use disorder compared with those with no such disorder (PR = .95, 95% CI = .89 to .99, $p < .01$).

Discussion

The results of this study indicate that, with respect to aspirin use, beta-blocker use, and cholesterol management, quality of post-AMI care at VA medical centers is high and, in general, does not differ between patients with and without serious mental disorders. An exception to this was the finding that presence of a substance use disorder significantly reduced the likelihood of use of beta-blockers, although even for this group the rate was higher than non-VA benchmarks (Jencks et al., 2000; National Committee for Quality Assurance, 1999). This relationship was independent of comorbid psychiatric disorders, demographic characteristics, chronic medical conditions, use of medical services, and facility characteristics.

Among the small number of substance abuse patients not taking beta-blockers ($N = 33$), a closer examination of the reasons revealed that most (90.9%) had not received a prescription for beta-blocker therapy. This finding suggests that underuse of beta-blockers in these patients is more a function of provider factors (*i.e.*, under prescription) than of patient factors (*i.e.*, poor compliance). Although these data do not make it possible to definitively isolate the reasons for this undertreatment by providers, studies describing generalists' attitudes toward patients with substance use disorders may provide some insights. These studies have found that physicians often lack the training and skills necessary for dealing with substance abuse patients (Ewan and Whaite, 1982; McGillion et al., 2000). Providers often feel frustration, disappointment, and disillusionment when treating patients with substance use disorders, and many regularly encounter physical or verbal abuse (McGillion et al., 2000). Moreover, substance abuse patients may be stigmatized by health care providers (Ritson, 1999), further reducing the likelihood of appropriate care.

In contrast to previous studies of mental disorders and post-AMI care (Druss et al., 2000; Druss et al., 2001), nearly half (44.1%) of the sample was under age 65 years. As a secondary analysis, we tested the interaction between age and substance use disorder and found it to be non-significant, suggesting that both younger and older patients with substance use disorders may be at increased risk for undertreatment with beta-blockers after AMI and that both groups should be a focus of quality improvement efforts.

Contrary to our hypothesis, aside from somewhat decreased use of beta-blockers among patients with substance use disorders, there was surprisingly little difference in rates of outpatient cardiac care post-AMI between patients with

and without mental disorders. This stands in marked contrast to studies of Medicare beneficiaries that have reported greater underuse of cardiac procedures (Druss et al., 2000) and medications (Druss et al., 2001) among mentally ill patients. Authors have argued that the integrated nature of the VA health care system promotes a uniform delivery of services, reducing disparities for vulnerable populations, such as racial/ethnic minorities (Jha et al., 2001). At least two factors may make this potential for reducing disparities in the VA particularly relevant for mentally ill patients. First, because such a large proportion (approximately 20%) of the VA's general patient population has a diagnosed mental disorder (Rosenheck and DiLella, 2000), clinicians may have an added level of experience and expertise in treating such patients. Second, because the VA provides medical and mental health services in the same facility, there may be fewer barriers to care than is seen in more fragmented Medicare and private-sector settings. It is important to continue to work to improve medical care in patients with and without mental disorders and to understand the role that integrated systems such as the VA can play in reducing disparities.

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Long-Term Assessment of Personality after Burn Trauma in Adults

Several studies have shown that burn victims display higher rates of premorbid psychopathology, such as depression, substance abuse, and personality disorders, than the general population (Patterson et al., 1993). Relationships be-